

SYMONS'S MONTHLY METEOROLOGICAL MAGAZINE.

X.]

NOVEMBER, 1866.

[PRICE FOURPENCE,
or 5s. per ann. post free]

RAINFALL INVESTIGATIONS IN FRANCE.*

It must be a source of great pleasure to all interested in the progress of rainfall inquiries, to find other nations taking up the subject with great energy; and that there is reason to hope, ere very long, that a thorough interchange of results may be of equal interest and utility to Meteorologists and Engineers in this and other countries. We cannot better illustrate the developments recently given to such inquiries, than by noticing the works enumerated at the foot. Professor Raulin's splendid monograph has long awaited that full and detailed notice which it merits, and our limited space precludes. The introduction gives a running narrative of the establishment of rain gauges at the various places in the south west of France; then follows Part I. devoted to observations, those from each station being preceded by full particulars of the size of the gauge, its height above ground and above the sea, where the observations have been taken, and by whom, also (if published) in what works they have been printed; then follow tables giving the total fall in the civil year, and in each month thereof, in each meteorological quarter, and year (*i. e.*, December 1 to November 30) also if the register embraces many years, an abstract in decennial means, and means, max. and min., of the whole period. Of course all these details are not always known, but their completeness may be estimated from their occupying over 200 pages of closely-printed matter. An appendix to the first part, by M. Abria, deals with the principal causes of differing results obtained at contiguous stations. Speaking of the relative rainfall indicated by large and small gauges, M. Abria remarks, "observations continued during a year with two gauges whose receiving surfaces were nearly as 20 to 1, have given almost identical results, not only in the totals, but even in the monthly values, which generally differ very slightly, the excess being sometimes on one side, and sometimes on the other." From the table we find that his gauges were respectively $4\frac{1}{2}$ and 20 inches in diameter; during the year the large gauge collected

* *Observations Pluviométriques faites dans le Sud-Ouest de la France (Aquitaine et Pyrénées) de 1714 à 1860, suivies des grandes séries de Montpellier, Paris, Genève et le Grand-Saint-Bernard et des résultats de quelques Observations Pluviométriques par M. Abria.* Par M. RAULIN, Professeur de Géologie à la Faculté des Sciences de Bordeaux. 1864. Paris: F. Savy, Rue Hautefeuille, 24. 1 vol. 8vo, 320 pp.

Commission Hydrométrique et Commission des Orages de Lyon, 1865—22^e Année. Résumé des Observations recueillies dans les Bassins de la Saône, du Rhone et de quelques autres Régions Accompagné de Notices diverses.

Tableau Comparatif des Observations Pluviométriques faites dans le Sud-Ouest de la France en 1865. Par M. V. RAULIN. Bordeaux, 1866.

31.54 in., and the small one 31.02. The second portion of Professor Raulin's work is devoted to comparisons and deductions of great interest.

The next work to claim notice, is the twenty-second report of the Hydrometric Commission of Lyons, and as all our readers may not be aware of the objects and duties of this body we may briefly mention that built as Lyons is, almost level with the Saône and the Rhône, which there unite their streams, it has always been very liable to destructive inundations. About 20 years since, it was resolved to establish rain gauges at different points in the upper watersheds of the rivers and endeavour from their indications to compute the height to which the river would probably rise; this has long been accomplished: each flood anticipated by several hours, by public notice of its approach, and the probable height to which the water will rise on certain of the bridges; so that the valuable merchandize for which the city is so famed may be removed above the line of danger. This we believe to have been the original purpose of the Commission, but its talented president has wisely not confined himself to this narrow field, but in successive volumes has published a series of articles on the meteorology and hydrology of the district of high interest. That just received may be taken as a fair type of its predecessors, and we therefore epitomize its contents.

1. Abstract of meteorological observations in 1865; the most remarkable feature being the high temperature, every month being above the average, and the mean of the year ($56^{\circ}.3$ F) $3^{\circ}.8$ F above the usual mean ($52^{\circ}.5$ F). The hottest year previously was 1859 ($55^{\circ}.2$ F). This heat has permitted the various crops to ripen perfectly, and the vine especially has yielded magnificent produce.

Following these introductory remarks, are the monthly rainfall returns from the undermentioned stations; we add the total fall in 1865 at each, remarking, *en passant*, that at scarcely any Station was there a drop of rain in September.

WATERSHED.	STATION.	Height above Sea.	Depth of Rain.
		feet.	inches.
Bassin de la Saône Supérieure	Courlon	1090	31.9
	Vesoul	784	20.6
	Gray	768	22.4
	Dijon	869	21.5
Bassin de la Saône Inférieure	Châlon	594	20.7
	Lons-le-Saulnier	856	15.1
	Bourg	919	39.0
	Fort Lamotte	597	31.0
Bassin du Doubs	Fort de Joux	3281	35.7
	Montbéliard	1273	47.9
	Besançon	1191	30.1
	Dôle	752	25.8
Bassin de l'Ardière	Monsol	1926	34.2
	Cercié	755	30.7
Bassin de l'Azer-gues	St. Nizier d'Azergues	1309	26.8
	St. Laurent d'Oingt	1810	28.6
Bassin de la Bre-venne	Tarare	1312	30.9
	L'Arbresle	742	27.7
	Ste-Foy-l'Argentière	1418	30.4
	Duerne	2703	27.2

WATERSHED.	STATION.	Height above Sea. feet.	Depth of Rain. inches.
Bassin du Rhône	Givors	502	31·6
Bassin du Rhône	St. Bernard	8173	43·7
Supérieur	Genève	1221	28·2
	Les Rousses	3645	48·0
Bassin du Rhins	Cublize	1525	29·6
Littoral Méditerranéen	Marseille	158	17·3

Daily observations at Lyons Observatory, and a sheet of curves, somewhat like Mr. Cator's Weather Diagram (see *Meteorological Magazine*, vol. i. p. 26) are followed by tables showing the daily rainfall at each of the stations just named, and also the direction of the winds, with remarks on thunderstorms and other occasional phenomena. Tables of the daily height of the Rhone at Pont Morand, from 1826 to 1855, and their careful analysis, occupy very many pages; and the report closes with a paper by M. Fournet, to which he merely gives the unassuming title of "*Documents relatifs à la Commission Hydro-métrique et à celle des Orages*," but which is really a masterly epitome of the progress of Meteorology and Hydrology in France, with articles on their relations to health, agriculture, geology, and water supply, analyses of the rivers and the chemistry of the atmosphere, to which we hope to recur on a future occasion.

The last work we have to notice is, in fact, a *British Rainfall* on a small scale; and here we have to congratulate Prof. Raulin on the increasing completeness of the geographical distribution of his stations, while we cannot but regret the absence of columns specifying the height of the gauges above the ground, and above the sea. We have in the following conversion of his results into English measures, supplied the deficiency from the previously mentioned large work, but obviously it is possible the heights may have been altered.

RAINFALL OBSERVATIONS IN THE SOUTH-WEST OF FRANCE, 1865.

STATIONS.	Height of Gauge.		Depth of Rain.	STATIONS.	Height of Gauge.		Depth of Rain.
	Above Ground.	Above Sea.			Above Ground.	Above Sea.	
	feet.	feet.	inches		feet.	feet.	inches.
Paris (Terrace)	89	279	18·9	Bordeaux (Fac. of Scs.)	32	62	30·0
„ (Courtyard)	0	190	19·8	„ (M. Petit Lafitte)	29	62	34·6
<i>Aquitaine North-West, or Charentaise.</i>				„ (Mil. Hosp.)	...	...	35·3
Poitiers	...	...	32·3	Bouliac	0	213	36·4
Melle	...	...	24·3	Cadillac	10	46	32·4
Comporté (near Niort)	...	...	32·7	Langon	10	158	31·9
Courçon	14	33	31·5	Col-de-Fer	13	75	25·2
Marans	...	21	31·9	Lavallade	...	656	23·9
La Rochelle (P.-et-Ch.)	5	18	33·6	Fumel	43	551	27·5
„ (Mil. Hosp.)	...	...	29·6	Villeneuve	...	...	28·0
St. Jean d'Angély	16	56	34·4	Agen (M. Magen)	26	174	30·2
Rochfort	4	21	34·9	„ (P.-et-Ch.)	7	184	28·9
Royan	...	16	30·3	Sos	...	427	21·8
Montguyon	23	325	37·4	Auch	...	...	39·9
Confolens	2	428	39·5	Mount-de-Marsan	7	138	30·2
<i>Aquitaine West, or Bordelaise.</i>				Beyrie	30	338	39·3
Arcachon	...	...	30·8	Peyrehorade	23	46	42·7
Bordeaux (Eta. Paulin)	...	...	38·0	St. Martin-de-Hinx ...	...	...	56·8
„ (Botanic Gard.)	...	...	38·8	Bayonne (P.-et-Ch.) ...	...	...	45·2

Bayonne (Mil. Hos.)...	...	...	51.6	Saint-Chély	...	3215	27.8
Aragori	...	...	75.8	Marvejols	...	2100	26.1
Lescar	...	...	37.9	Mende	...	2426	28.0
Peyranère	3	4645	69.1	Montmirat	...	...	21.3
Bagès-Béost	5	2204	34.5	Florac	...	...	33.7
Bagnères-de-Bigorre				La Blaquière.....	20	2645	22.9
(P.-et-Ch.)	6	1782	59.0	Rodez	...	...	20.5
" (M. Lyte)	...	...	51.5	Carmaux	27	797	26.3
<i>Aquitaine East, or Toulousaine.</i>				Albi	36	590	28.6
Cahors	...	459	25.9	Castres	13	572	19.2
Figeac	...	738	26.0	Alban	27	2097	32.9
Montauban	10	285	22.0	La Salesse	21	3630	28.8
Verriès	27	266	22.9	Casternaudary	...	610	15.6
Toulouse (Canal Office)	12	491	23.4	Carcassone.....	31	369	27.2
Muret	3	541	25.8	Limoux	...	538	20.1
Aurignac	2	1070	16.8	Quillan	...	...	26.1
Montréjeau	34	1549	39.5	<i>Appendix, Mediterranean,</i>			
Bagnères-de-Luchon..	8	2044	42.3	Sallèles d'Aude	...	39	21.7
St. Giron	30	1316	24.1	Narbonne	...	43	19.7
Couflens	26	2343	29.2	La Nouvelle	20	30	17.5
Boussenac	25	3176	60.1	Perpignan (Norm.Sch.)	...	...	20.4
Le Fossat	30	816	29.9	" (Mil. Hosp.)	...	...	17.5
Le Mas-d'Azil	36	994	32.5	Amélie-les-Bains	...	...	31.1
Royat	30	873	24.0	Montpellier (Faculty of			
Foix	46	1306	34.5	Sciences)	...	...	28.3
Ax	43	2405	30.5	" (Bot. Gard.)	3	97	30.4
Mirepoix	30	1020	24.7	<i>Appendix, Alps.</i>			
Belesta	46	1650	31.9	Genève	...	1335	28.2
Aurillac	...	4394	43.9	Grand St. Bernard ...	...	8173	43.7
Saint-Flour	...	2898	27.1				

THE YORKSHIRE RAINFALL.

To the Editor of the Meteorological Magazine.

DEAR SIR,—I observed with some surprise that the rainfall recorded on the 29th August at those places where the floods were most severe scarcely exceeded, if at all, the fall measured here, where there was little or no flood. A gauge 6 in. above ground measured 2.11; another at 1 ft. 2.05, and a third (12 in.) at 5 ft. 1.91, between 9 a.m. on the 29th, and 9 a.m. on the 30th; but between 7 a.m. on the 29th, when the rain began, and 7 a.m. on the 30th, the fall at 6 in. from the ground was 2.4 in. The rain was less heavy in the west, and even in Borrowdale, where I was at the time, could not, I should fancy have much exceeded an inch.* This accounts for the river being but little swollen here. Indeed it is so noticeable that the rise and fall of the river depends very little on the fall of rain in this neighbourhood, that the people here have invented a theory that it is caused by the wind blowing on Summerwater, a small lake in Wensleydale. The real reason, I suppose, is that the rains in the level country, and on the moors among which the Ure rises, do not occur always at the same time. A warm southerly wind meets the cold hill tops, and causes a very heavy fall, while here where there is no such condenser but little rain falls. This was the case remarkably in September, 1865, when a very warm moist wind arose on the 9th, and a fall of 6 in. at Seathwaite, and 2 in. at Arncliffe took place, while here the fall was only 0.07, which fell in a gradual drizzle. On the other hand, when a north wind furnished the condenser, more rain was extracted out of the warm air of the level parts than from the colder air of the mountains. The result may be tabulated:—

<i>S. wind.</i>	<i>N.E. wind.</i>
Hills (Arncliffe).....	2 in.
Level Country (Ripon) 0.07 in.	1 in.
	2 in.

I may mention that during the last four months 17.33 in. have fallen here, the fall exceeding 4 in. each month, which is more than I ever knew before—the fall in 1860 having been only 16.7 for the corresponding period, June to September.

Ripon, October 13th.

I am, Sir, &c., F. W. STOW.

* Seathwaite, 0.44 in.—*Ed.*

RAINFALL IN OCTOBER, 1866.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	HEIGHT OF GAUGE.		DEPTH OF RAIN.				Days on which .01 or more fell.
		Above Ground	Above Sea Level.	Total Fall.	Difference from average 1860-5	Greatest Fall in 24 hours.		
						Depth.	Date.	
I.	Camden Town	ft. in.	feet.	inches.	inches.	inches.		
II.	Staplehurst (Linton Park) ...	0 6	100	2·32	— ·28	·89	18	14
III.	Selborne (The Wakes).....	0 6	296	1·38	—1·72	·34	18	11
III.	Hitchin	4 0	500 ?	1·66	—2·55	·47	24	10
IV.	Banbury	2 0	240	1·54	—1·01	·52	19	11
IV.	Wisbech.....	7 0	345	2·06	— ·37	·56	22	11
V.	Bury St. Edmunds (Culford).	0 6	10	1·37	...	·30	22	11
V.	Calne	1 2	...	·54	—2·18	·10	18 & 27	8
V.	Plymouth (Goodamoor)	0 11	250	2·07	...	·64	21	11
V.	Barnstaple.....	0 2	580	2·85	—3·82	·64	14	9
VI.	Taunton (Fulland's School)	0 6	31	2·13	—1·99	1·03	25	13
VI.	Shrewsbury (Highfield)	1 4	...	1·90	—1·64	·54	22	15
VII.	Tenbury (Orleton)	5 6	200	1·61	—1·27	·53	22	10
VII.	Leicester (Wigston)	0 9	200	2·66	— ·57	1·02	25	15
VII.	West Retford	0 6	220	2·40	— ·30	·85	23	10
VIII.	Derby.....	0 6	50	...	...	...	...	...
VIII.	Manchester	5 0	180	2·95	+ ·11	1·00	18	12
IX.	York	2 7	106	2·52	—1·29	·52	24	13
X.	Skipton (Arncliffe)	0 6	50	1·87	— ·65	·74	25	14
X.	North Shields	3 0	750	4·46	—2·20	1·30	29	11
XI.	Borrowdale (Seathwaite).....	1 0	124	1·58	—1·70	·61	22	14
XI.	Abercarn ...	1 0	422	9·62	—6·70	6·00	29	11
XI.	Haverfordwest	1 3	450	3·74	...	1·07	24	11
XI.	Rhayader (Cefnfaes).....	2 0	60	2·74	—2·45	·59	25	9
XII.	Llanberis (R. Victoria Hotel)	2 0	880	3·14	—2·46	·70	25	14
XII.	Dumfries	1 0	370	3·88	...	1·22	23	10
XIII.	Hawick (Silverbut Hall)....	0 5	70	2·39	—2·53	·97	18	12
XIII.	Ayr (Auchendrane House) ...	4 0	512	1·28	...	·42	29	15
XIV.	Otter House	2 3	94	2·65	—2·30	·82	29	11
XV.	Leven (Nookton)	0 6	130	...	...	...	...	...
XV.	Stirling (Deanston)	0 6	80	1·89	—1·86	·51	18	15
XVI.	Logierait	0 0	130	3·28	—1·63	·86	18	15
XVI.	Ballater	1 0	250	3·21	...	1·00	18	14
XVII.	Aberdeen	0 10	656	2·08	...	·64	29	14
XVII.	Inverness (Culloden)	4 8	115	2·65	...	·44	31	17
XVIII.	Fort William	3 0	104	1·94	...	·64	31	11
XVIII.	Portree	0 8	20	6·85	...	1·82	29	18
XIX.	Loch Broom	0 4	60	7·78	—3·00	2·26	31	15
XIX.	Helmsdale	0 8	48	3·19	...	·87	31	13
XX.	Sandwich	1 0	34	2·01	...	·62	31	16
XX.	Cork	2 0	78	2·76	—2·16	1·02	28	17
XX.	Waterford	6 0	65	3·21	...	1·04	17	16
XXI.	Killaloe	4 0	60	2·60	—1·80	1·29	17	13
XXI.	Portarlinton	5 0	128	2·44	—2·58	·56	26	14
XXII.	Monkstown	9 0	236	1·73	—3·40	·33	14	14
XXII.	Galway	0 6	100	2·74	—1·18	1·06	17	12
XXIII.	Bunninadden (Doo Castle) ...	6 0	25	2·60	...	·46	23 & 29	17
XXIII.	Bawnboy (Owendoon)	1 0	...	2·10	...	·67	17	15
XXIII.	Waringstown	1 3	218 ?	3·49	...	1·10	17	14
XXIII.	Strabane (Leckpatrick)	0 4	191	2·06	...	·62	17	10
XXIII.	Strabane (Leckpatrick)	0 5	260	2·35	...	·53	17	15

+ Shows that the fall was above the average ; — that it was below it.

METEOROLOGICAL NOTES ON THE MONTH.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hall.

ENGLAND.

CAMDEN TOWN.—So dark from 9 to 10 a.m. on 16th as to require gas; dense fog on 27th.

LINTON PARK.—First 17 days fine, dry, and bright, contrasting strongly with September; the remainder changeable—winds, fogs, and hazy showers, alternating with now and then a fine day; no heavy rain, bar. very unsteady; frosts on 15th, 16th, 27th, and 29th, but not severe enough to do any harm. No high winds, nor any thunder; the nights very dark when there was no moon.

SELBORNE.—Winds very variable, but for the first half of the month the N.E. most prevalent; afterwards S.W. till 26th. Hoar frost on five nights; Fog on 27th; only .04 of R prior to the 16th; fog from 1st to 9th inclusive. Max. temp. 65° on 3rd; min. 28° on 16th and 29th. Aurora on 10th.

BANBURY.—Max. 62°; min. 32°·5; only .03 in. of R prior to 17th.

WISBECH.—Hoar frost on 15th and 16th. Lunar halo on 23rd. The month generally was calm, dull, and foggy; there was a strong wind on one day only (the 30th), and the bar. seldom below 30 in.

CULFORD.—Max. 68° on 2nd; min. 22° on 14th and 15th, the frost making sad havoc with such things as French beans, dahlias, &c.

GOODAMMOOR.—Max. 68°, min. 30°; no R from 1st to 13th.

TAUNTON.—Heavy mist on 3rd; frost on 13th. Only .07 in. of R prior to 14th.

SHREWSBURY.—Only .01 in. prior to 15th.

ORLETON.—Only .02 in. prior to 14th. Rainbow at 9 a.m. on the 11th. The first half of the month was dull, damp, and cloudy, with no R and scarce any sunlight. After the 17th a large amount of R fell, especially on the 24th, when the brooks were flooded more than they have been all the season, but there were a few bright days at intervals. Max. 63°·4 on 19th; min. 29°·5 on 16th. No T or L.

WIGSTON (Leicester).—The character of the month has been foggy, overcast, and cheerless, though there was only .10 of R till the 19th.

ARNcliffe.—The early part of the month remarkably fine; scarce any R till the 17th. Max. 59° on 1st; min. 28° on 16th.

NORTH SHIELDS.—Fog on 1st, 2nd, and 3rd.

SEATHWAITE.—No rain on first 15 days. The month chiefly remarkable for the tremendous downfall of 6'00, on the 29th; this fall has only been exceeded on three occasions during the 22 years the gauge has been in use. The fall at the Styre for the month is 15'21 in.; computing the fall on the 30th by comparing this with the total at Seathwaite, we have for the Styre gauge the enormous quantity of 9'48 in., the whole of which fell between 4 p.m. on 29th and 9 a.m. on 30th. So high a flood has not occurred in living memory.

WALES.

ABERCARN.—The month has been rather fine, the temp. being about that of September, and nearly all the rain falling between the 17th and 24th; wind easterly for the first fortnight.

HAVERFORDWEST.—First fortnight cloudy, calm and mild; afterwards a period of broken weather, wet and very stormy, particularly the 28th and 29th, when it blew a heavy gale; slight frost towards the end, but on the whole a fine month, the rain falling principally at night.

CEFNFAES.—Max. 63°; min. 24°. A mild and damp month; leaves falling so early that their autumnal beauties could scarcely be enjoyed.

SCOTLAND.

DUMFRIES.—The weather dry for the first twelve days, and favourable for the close of harvest, though sometimes hazy; on the 15th, 16th, and 17th, sharp frost nipped dahlias and other flowers; the 18th a very wet and stormy day. The latter half of the month showery, but on the whole not unseasonable. The night temp. nearly 5° above last October, and the average for the month 2°·7 higher. The potatoe crop in some places little or no disease, in others a fourth to half; on the whole the proportion of sound tubers considerably above the average crop.

SILVERBUT HALL, HAWICK.—Farmers busy from the 7th to 20th leading their

corn. Green peas gathered daily. Fishers all very busy on 30th. Dahlias, verbenas, geraniums, and many tender annuals, are still blooming beautifully, and might make a coronet fit to adorn the brow of Autumn.

AUCHENDRANE.—Max. 66° on 1st and 17th; min. 27° on 26th. Frost on 7 nights; the winds have been chiefly from the south and moderate, with frequent calms, and a large amount of cloud. Driest October since 1856.

NOOKTON.—Weather calm and mild for the season.

DEANSTON.—Max. 62°·5 on 19th; min. 23°·5 on 26th. Very high wind on 29th. Grain crops got in by the middle of the month, but in bad condition. Though not much R fell in the early part of the month, yet there was little or no wind, and the air was dull, and damp with heavy dews and haze. Some disease of potatoes is noticed, but not to a great extent. No thunder.

LOGIERAIT.—A fine month; strong sunshine from 5th to 10th; frost on the morning of 25th.

BALLATER.—Lunar halo on 21st. The first few days were remarkable for a continuance of dense fogs, with easterly airs or calms, with a very high bar. Max. temp. 67°·5 on 6th; min. 23° on night of 25th. Aurora on 7th.

ABERDEEN.—The month has been much more damp, warm, and quiet than the average, and a most unseasonable one for the harvest, a considerable portion of the crops being still out. Bar. above the average. Aurora on 7th, 9th, and 13th.

CULLODEN.—Only ·27 in. of R prior to the 27th. Fogs in the early part of the month. Hail on 28th.

ROSSE PARSONAGE, FORT WILLIAM.—Aurora on 3rd. The early part of the month was unusually fine and warm. On the night of the 13th a good deal of snow fell on the hills, and Ben Nevis was covered more than half way down. The latter part of the month was very wet, a greater amount being registered by me on the 29th than on any day in the two years during which observations have been taken here.

PORTREE, ISLE OF SKYE.—As I anticipated, October has proved a fine harvest month—the weather being fine till the 19th, the crops were secured in fine condition; after that date, wet and stormy, the 31st being the wettest day of the season, it having rained 13 hours without intermission. Scarlatina is still on the increase, and many deaths have occurred therefrom.

LOCHBROOM.—From the 1st to the 12th fine, dry, harvest weather; thence to 16th very changeable—cold, damp, and snowy on the heights; frosty at night till the 21st; fine, dry, and windy to the 26th; changeable, with snow and sleet, thence to the end, every sort of bad weather, high winds prevailing, especially on the 28th to 29th from the N.; the last day a constant downpour for 24 hours, though not heavy. The month, on the whole, till the 26th, favorable for the farmer and grazier, enabling the former to gather in the remainder of his crops, to give air and sunshine to that which had been harvested under less favorable weather, and to lift his potatoes in a capital state; it also enabled the grazier to prepare his flocks and herds for the winter.

SANDWICK.—October has been a fine harvest month, drier and milder than usual—indeed, the driest October on record, except 1856, and it was as dry as that till the 27th, 0·80 in. only having previously fallen; 1·96 fell on the last 5 days; the temp. was 1°·4 above the mean of the previous 39 years. Aurora on 5 nights; lunar halo at midnight on 22nd; gale on 17th from 6 a.m. all day, averaging 40 miles an hour. Bright meteor, shooting N., 6.30 p.m. on 5th; T & L on 29th.

I R E L A N D.

KILLALOE.—The smallest rainfall in October for 20 years, except three, viz :—1850=2·07; 1856=1·89; 1859=2·15.

MONKSTOWN.—The first 12 days very heavy, damp, and foggy, the 3rd, 7th, and 9th particularly so; no rain fell during that time. The absence of ozone during the first 16 days was very remarkable. On the 17th rain set in, and from thence to the 26th (on which there was a heavy gale), 2·25 in. fell. On the nights of the 24th and 25th, the ther. fell to 27° and 26° respectively. On the 24th, at 5.15 p.m., while still daylight, a bright meteor was seen, first a pale yellow, then changing to blue, it passed slowly from S.E. to E.; it was considerably brighter than Jupiter.

DOO CASTLE.—No rain till the 12th; generally speaking the first half of the month was calm, dull, and foggy—the remainder wet. Frosts on the 9th, 13th, 16th, 25th, and 26th. The months of September and October of 1866, as compared with those of 1865, have reversed themselves in the quantity of rain fallen.

OWENDOO.—The very seasonable weather of the first 16 days of this month have been of the greatest service to the country, and enabled the harvest to be at length secured. A *very* heavy fall of rain at 7 p.m. on 21st.

WARINGSTOWN.—Fine and seasonable; sharp frosts on the nights of the 15th and 24th.

LECKPATRICK.—Winds easterly to the 11th, S.E. to 22nd, then shifted to south. Very dry beginning of the month; only on one occasion during the year were there so many days without rain—Oct. 1st to 12th, and July 14th to 26th. Frost on grass on six nights.

RAINFALL ON OCTOBER 29TH.—Mr. Fletcher's remarks on the Seathwaite return may be supplemented by a few words on the weather at other stations on that day, and on the narrow strip within which alone the fall was unusual—a strip extending along the west coast from Wales to the Hebrides, but only in places even of this strip did the fall assume unusual intensity. Mr. Crosthwaite was in Borrowdale, and reports the floods such as to render the roads impassable for some hours; yet at Keswick he only had 2.07 in., and at Grasmere and Llanberis the fall is returned as under an inch. At Fort William and in the Isle of Mull nearly 2 inches fell. The weather was at *Abercarn* squally from S.; *Haverfordwest*, heavy gale; *Hawick*, strong winds; *Ballater*, red sunrise, then clear, blew hard afterwards; *Culloden*, wet and stormy in evening; *Portree*, heavy westerly gale from 1 to 8, a.m., with hail; *Lochbroom*, gale from N.; *Orkney*, thunderstorm.

LATEST INTELLIGENCE.

THE PREDICTED METEOR SHOWER.—The accounts which are coming in abundance from all parts of the country bear uniform testimony to the magnificence of the display; and we find that the time of maximum indicated by the following letter differs only two minutes from that given by Mr. Hind, at Twickenham:—

TO THE EDITOR OF THE TIMES.

Sir,—Perhaps you may deem the subjoined statement of the number of meteors noted by me last night worth a corner in *The Times*.

Your obedient servant,

G. J. SYMONS.

136, Camden-road, N.W., Nov. 14.

METEORS COUNTED IN PERIODS OF FIVE MINUTES EACH, THE EYES BEING DIRECTED CONSTANTLY TO LEO.

	Time of Watching.		No. of Meteors.		Time of Watching.		No. of Meteors.
	h. m.	h. m.			h. m.	h. m.	
Nov. 13	11.45 p.m.	to 11.50 p.m.	17	Nov. 14	2.30 a.m.	to 2.35 a.m.	25
Nov. 14	0. 0 a.m.	to 0. 5 a.m.	21		2.45 „	„ 2.50 „	20
	0.15 „	„ 0.20 „	41		3. 0 „	„ 3. 5 „	26
	0.30 „	„ 0.35 „	83		3.15 „	„ 3.20 „	20
	0.45 „	„ 0.50 „	87		3.30 „	„ 3.35 „	16
	1. 0 „	„ 1. 5 „	264		3.45 „	„ 3.50 „	12
	1.15 „	„ 1.20 „	276		4. 0 „	„ 4. 5 „	16
	1.30 „	„ 1.35 „	141		4.15 „	„ 4.20 „	12
	1.45 „	„ 1.50 „	60		4.30 „	„ 4.35 „	8
	2. 0 „	„ 2. 5 „	48		4.45 „	„ 4.50 „	4
	2.15 „	„ 2.20 „	25				

Remarks.—Meteors most numerous at 1.12 a.m., when they were falling at the rate of 100 per minute—in fact, the sky was scored in all directions with their trains; the largest was not twice the apparent brilliancy of Sirius; the trains were, in some instances, visible in a 2½-in. telescope for two minutes. From 2 to 3 a.m. the meteors were not so large as before and after that hour, nor did they appear so uniform in direction,—two passed in parallel lines, but opposite directions. No lightning was seen unless it was at Oh. 35m., when two flashes of light were seen, but they were supposed to be from meteors in the north. I estimate the total number visible at about 7,000 or 8,000.—G. J. S.